Spring 5-3-2018

Institutional Outcomes following Total Pancreatectomy and Islet Autotransplantation in Children

Stephen P. Sekoulopoulos
Valparaiso University, stephen.sekoulopoulos@valpo.edu

Institutional Outcomes following Total Pancreatectomy with Islet Autotransplantation in Children

Stephen Sekoulopoulos and Dr. Jaimie Nathan

Cincinnati Children's Hospital Division of Pediatric General and Thoracic Surgery

Aim

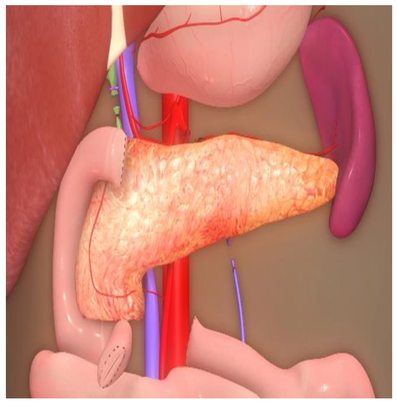
• To review our institutional outcomes following total pancreatectomy and islet autotransplantation for debilitating acute recurrent (ARP) and chronic pancreatitis (CP) in children.

Background

• Chronic pancreatitis is a progressive fibroinflammatory injury that can result in endocrine and/or exocrine insufficiency, as well as in severe pain and impaired quality of life.

•The fibrotic pancreas is removed while the insulin-producing islets are isolated and transplanted back into the patient, usually into the liver via the portal vein.

Figure 1: Total pancreatectomy



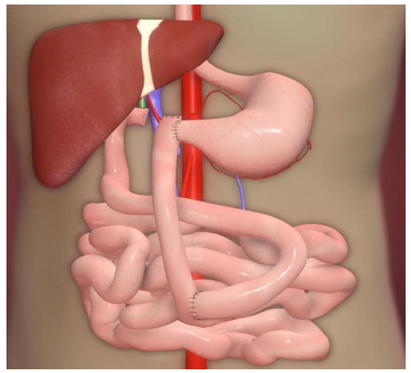
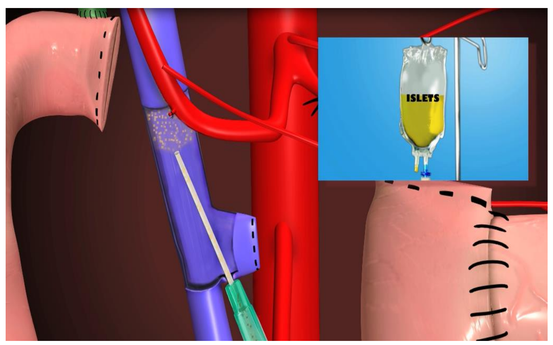


Figure 2: Biliary and Alimentary Tract Reconstruction

Figure 3: Islet Autotransplantation



Methodology

• 17 patients underwent pancreatectomy with islet autotransplantation between April 2015 and April 2017 at Cincinnati Children's Hospital.

- Open, pylorus-preserving approach with accompanied splenectomy and gastrojejunostomy tube placement.
- 16 total pancreatecomies and 1 subtotal pancreatectomy.
- Islet isolation by enzymatic and mechanical digestion (Ricordi method).

• Documented surgical complications, readmission, reoperations 90 days post-op.

• Preoperative and postoperative opioid use was assessed, as was islet function.

Results

Table 1: Demographic Data

Criteria	Values (N = 17)
Sex (female)	**11 (65%)**
Age (years)	**12.1 (4 - 17)**
Weight (kg)	**53.6 (16.6 – 108.3)**
Height (cm)	**150.2 (103 – 185.5)**
Acute Recurrent Pancreatitis (yes)	**3 (18%)**
Chronic Pancreatitis (yes)	**14 (82%)**
Preoperative Enteral Tube or TPN (#)	**7 (41%)**
Visits for Pain 18 months prior to operation (#)	**2.5 (0 – 6)**
ED visits 18 months prior to operation (#)	**1.3 (0 – 6)**
Genetic mutations (yes)	*14 (82%)*
PRSS1	*6 (35%)*
SPINK1	*5 (29%)*
CFTR	*6 (35%)*
CTRC	*0 (0%)*
Pancreas Divisum (yes)	**8 (47%)**
Autoimmune Pancreatitis (yes)	**1 (6%)**
Pancreatic Exocrine Insufficiency (yes)	**8 (47%)**
Required Pre-Operative Insulin	**1 (6%)**
Postop ICU Length of Stay (days)	**10.4 (7 – 18)**
Total Length of Hospital Stay (days)	**26.1 (19 – 36)**

Figure 4: Pre-Op and Post-Op Pain Management

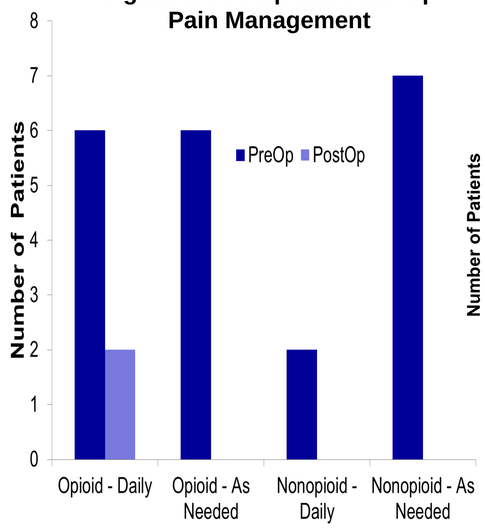


Figure 5: Patients Requiring Opioids Following TPIAT

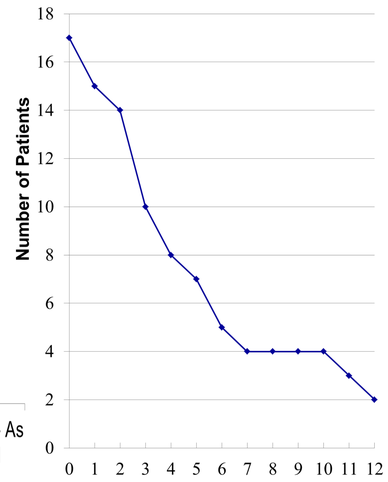


Table 2: Post-Operative Complications

Complication	Values (N = 17)
Intra-Abdominal Bleeding	**1 (6%)**
Upper GI Bleeding	**1 (6%)**
Small Bowl Obstruction	**1 (6%)**
Wound Infection	**2 (12%)**
Portal Vein Thrombosis	**0 (0%)**
Fluid Collection	**3 (18%)**
Hypoglycemia	**1 (6%)**

Table 3: Readmission and Reoperation following TPIAT

Criteria	Values (N = 17)
Number of Patients Readmitted	**6 (35%)**
Fever	*1 (6%)*
Abdominal or Other Non-Localized Pain	*4 (24%)*
Enteral Tube Complications	*2 (12%)*
Length of Readmission (days)	**4.9 (2 - 12)**
Patients Returning to the OR	**2 (12%)**
Exploratory Laparotomy	*2 (12%)*
Patients Requiring an IR/Endo Procedure	**6 (35%)**
Drainage of Intra-abdominal Fluid	*3 (18%)*
PICC	*2 (12%)*
C-Line Removal	*2 (12%)*
EGD	*1 (6%)*
GJ Tube Change	*2 (12%)*
Therapeutic Procedure	*2 (12%)*

Table 4: Islet Infusion and Insulin Use

Criteria	Values (N = 17)
Total IEQ	**330,326 (172,300 – 488,000)**
IEQ/kg	**6,677 (3,992 – 14,242)**
Portal Vein Infusion	**16 (94%)**
Peritoneal Cavity Infusion	**1 (6%)**
Insulin Independent	**4 (24%)**
Time on Insulin (months)	*8 (4 – 16)*
Partial Graft Function	**13 (76%)**

Conclusions

- TPIAT is an important option in treatment of children with ARP/CP and is considered when maximal medical therapies and endoscopic approaches fail to relieve pain and to address complications.
- Comprehensive multidisciplinary patient evaluation is critical to ensure optimal outcomes following TPIAT.
- In appropriately selected children, TPIAT achieves durable pain relief and improves QOL with manageable glycemic control.